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ORIGINAL FILE

FEDERAL COMMUNICATIONS COMMISSION
7435 Oakland Mills Road
Columbia, Maryland 21046

February 28, 1989

IN REPLY REFER TO
File DN-87-268

RECEIVED
MAR - 6 1989
Federal Communications Commission
Office of the Secretary

Mr. Huson A. Wilken
50 Main Street
Owego, New York 13827

Dear Mr. Wilken:

This is in response to your letter, dated February 14, 1989, regarding high definition television (HDTV).

Please be advised that your letter has been forwarded to the Dockets Branch in Washington, D.C. for inclusion in Docket Number 87-268.

Sincerely,

/s/

Robert L. Cutts
Chief,
Authorization and Evaluation Division

cc: Dockets Branch w/original incoming

14 February 1989
50 Main Street
Owego, New York

Chef
Authorization and Standards Division
Office of Science and Technology
Sir:

Before I get into the discussion of this letter let me tell you that I an an AAS Degree from a local community college with a my major in Industrial Technology with an Electrical Emphasis.

I have read several articles on the subject of high definition television and before we can use in on an international bais where televison transmission and reception in international we have get over the following hurdles which were set up on the basis that every county wants to do things according to there own standard regardless of this lack of an international set of standards on a given issue impedes the advancement of the technology in that field. The various standards are:

1. Using two fields to a frame in those countries with their utility system set up to use 60 hertz electrical power use 30 image frames per second.

2. Those counties which use 50 hertz electrical power and 2 fields per frame uses 25 frames per second.

3. The basic standard for the movie industry unless one wants to make a movie to show the subject with the speed of the subject slowed up or speeded up is 24 frames per second. If one uses 2 image fields per frame of movie than that gives 48 fields per second.

4. There are three different standards as to how many scan lines should make up one image frame and the standards ar 525, 625, and 825 scan lines per frame.

5. There exists four different systems for how to transmit and receive tv images done in full color.

6. Television is currently set up so that the aspect ratio for the image is 3 units tall by 4 units side and this standard is based on the orginial aspect ratio standard set up by the movie industry.

7. Now the movie industry has come up with a few new aspect ratios which are designed to film the subject with a wider than normal angel of view while maintaining a normal or narrow than normal angel of view vertically. The problems with these new aspect ratios is that no one can agree on what this new aspect ration should be.

The new standards for high definition television should be as follows:

1. The broadcast industry has discovered that any any analog signal which is transmitted with FM instead of AM can be received with a much greater signal to noise ratio and the receiver can work on a much weaker signal on FM than it can on AM to obtain this greater signal to noise ration. This means that a television station could transmit the video signal signal with less power and the receivers could receive the video signal just as well as it did with the much higher powered AM transmitters. This would also mean a savings in the electrical power used to run television stations. Those people who transmit television programs by way of a communications sattalite have realized these things and that is why they transmit the video signal along with the audio signal in FM rather than in AM. Since the basic receiver to which any sattallite receiver is connected must convert the FM video signal into an AM video signal that means as it travels down the cable which connects the sattallite receiver to the basic tv receiver the signal could be messed up with any electrical noise which is trong enough in and around this cable and that means that the signal to noise ratio would be reduced. This in turn means that the quality of the video signal as displayed on the picture could be poor than it has to be along with the fact that one could be seeing some electrical noise on the screen.

The new standard would be that all video signals would be transmitted and received in FM.

2. The new standars would use a tranmission band width as needed which means that the bandwidth for the transmitters and receiver would be set so that they could work on the widest bandwidth needed for any system of transmission and reception but if the system being used to transmit a given program is less than this bandwidth the system would be instructed to use only as many megahertz in difference between the highest and lowest frequency on the broadcast channel as is needed to transmit the video and audio signals for that program.

3. The system would be instructed to produce a video signal at the transmitter and upon reception which has as many field, frames per second, and scan lines per frame as either contained in orginial video tape on which the progam was recorded, or the new number of frames, field per second, number of scan high lines, and any desired aspect ratio. The term desired aspect ratio means the that if the production to be transmitted was done as a movie than the transmitted as received aspect ratio (ratio of verticall to horizontal dimmesions on the image) should be the same as that used when the movie was filmed.

4. Another problem with the new system is if one takes the input power to the transmitter and receiver and converts its frequency to one common frequency on which one base

things so that there is one imasge field per cycle of power and two fields per frame over a period of two cycles of electrical power. If one looks at the numbers of 50and 60 hertz as the worlds two basic frequencies for electrical utilities and than include in the math the number 24 as the number of frames per second for movies and the matching 48 fields per second for these movies. When one finishs the math one would use a frequency of weither 1200 or 2400 hertz and these two frequencies are too high if one uses the standard which says that there is one field per cycle of power and a frame consists of two fields or two cycles of electrical power. In order to make this system work instruct it to work on either 50 or 60 fields per second with two filed per frame if it is transmitted as a played back video tape or live, and 48 field or 24 frames with a freuqncy of 48 hertz when the program being transmitted is a movie done on movie film.

5. Also instruct the system that if the movie or video tape being transmitted was done in blacj and white instead of in color the system shall work in black and black with none of the signal being transmitted or received in color.

6. For those people who own television receivers set up to work on the present standards each countybelong to the International Telegraph Union shall transmit to a box containing the needed circuity, which is connected to the older receivers, to convert the signal as needed so that it can be received by these receivers.

7. The term to be instructed as used above means that the receivers and transmitters will have an extra circuit in it which will instruct the rest of the circuit on how to operate so that it will work with electrical power which has been converted to the proper frequency for the number of image frames being sent and received per second, (either 48, 50, or 60 hertz for 24, 25, or 30 frames per second), along with the proper aspect ratio, and number of scan lines per frame and field.

8. The ITU would agree upon a date which would be far enough into the futher that every television station, producer of tv programs, and manufacturers of transmitters, and receivers would have enough time to save up enough money to beable to switch over their manufacturing setup, transmitters, and receiver over to the new equipment and standards. Also this date would be selected so at least 90% of the television receivers would have to be replaced because they are so old that they are about to be in such a condition that they can not be repaired or it would be to costly to repair them and therefore most people would be buying receivers that would work on the new standards.

9. Also there would be no restrictions put on the size

of the pictur tubes to be used in the receivers since the size of the image displayed on each receiver would be adjusted to match the size of the screen on the picture tube just so long as the ratio of the vertical to horizontal dimesions matchs the correct ratio for the video signal being transmitted rather than restricting the size of the picture tube to one set of dimesions.

If the above things are done this will alow the television industry to develope and use the new standards for high definition while making the new standard flexiable enough that any county can use them along with the movie industry with making them change their image speed to 25 or 30 frames and it allows the movies made at 24 frames per second to be broadcast while giving everybody in the industry enough time to change over to the new standards.

Thank you for considering my recommendations for how to set up the technical standards for the new high definition television while at the same time you work with the President and Congress to encourage our electronics industry to set up the finial version of these standards along with a prototype transmitting standard which will transmit under these new standards to a group of receivers given to homes in the area near the stanation. This station and the receivers will be used to perfect the new standard and the matching transmitters and receivers.

Sincerely yours,

Huson A. Wilken